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EXAMINER

ELLIS, SUEZU Y

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,009

Applicant(s)

TAKEYAMA ET AL.

Examiner

Suezu Ellis

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4,12,18,22-25,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3,4,12,22,24,25,27 and 28 is/are allowed.
- 6) ☒ Claim(s) 18 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

RESPONSE TO AMENDMENT

Response to Arguments

Applicant's arguments with respect to claim 3 have been fully considered and are persuasive. The rejection of claim 3 has been withdrawn.

Applicant's arguments with respect to claims 18 and 23 have been considered but are moot in view of the new grounds of rejection.

Claim Objections

In claim 3, line 20, replace "to count number" with --to count a number--.

In claim 3, line 24, insert --(b)-- before "to take".

In claim 4, line 11, replace "unit that, counts number" with --unit that counts a number--.

In claim 4, line 15, replace "untis" with --units--.

In claim 22, line 9, replace "counts number" with --counts a number--.

In claim 23, line 19, remove "adjusting," before "using a clock frequency".

In claim 24, line 11, replace "counts number" with --counts a number--.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 23, the claim prior to amendment recited the clock frequency adjusting unit being shared by the optical systems. However, the current amendment fails to recite the clock frequency adjusting unit being shared by the optical systems. It is unclear if applicant intended to omit that portion of the claim. Please clarify. For examining purposes, the claim will be treated as is in the current amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent JP 2001-180043 (Maeda) in view of Omori et al. (US 2003/0067533).. See pre-grant publication 2001/0028387 for translation purposes for Maeda. Hereinafter, Omori et al. will be referred to as Omori.

With respect to claim 3, Maeda illustrates in Figs. 11 and 27, an image forming apparatus comprising a plurality of optical systems (image formation units) and optical

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carriers (laser beam scanning units), wherein each system scans a surface of the image carrier with a laser beam to form a multi-color image by superimposing each of four colors, wherein each image formation section has one color (e.g. yellow, magenta, cyan and black) ([0105]). Maeda further discloses a plurality of first detectors that are disposed at a first position along the main scanning direction of the laser. Although Maeda fails to expressly disclose in Fig. 27, a plurality of second and third detecting units disposed at a second and third position along the main scanning direction of the laser, Maeda does disclose in Fig. 2, it is well known for a single system to have both first and second detecting units disposed at a first and a second position along the main scanning direction of the laser. Thus, it would be an obvious design choice that both optical systems in Fig. 27 would have a first and second detecting unit as well, in order to detect the start and end of the scanning direction. In reference to Fig. 2, Maeda discloses when the laser scans both of the sensors (201 and 202), the sensors may output synchronization detection signals DETP 1 and DETP 2, respectively. Maeda further illustrates in Fig. 27, each image forming apparatus having a magnification correction section (208-1, 208-2) wherein each magnification correction section generates its own write clock. Note, Fig. 22 is a block diagram of the construction of the magnification correction section (208) that illustrates the inclusion of a write clock generating section (302). Maeda discloses the magnification correction section adjusts the clock frequency ([0085]). Maeda further discloses a time difference counting section measures the time difference between the generation time periods of DETP 1 and DETP 2, where section includes a counter that will be reset by the DETP 1 and start

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counting write clocks that are generated via a write clock generator ([0085], [0089]).

Maeda and Omori are directed towards a similar field of endeavor of image forming apparatuses. Omori discloses in Fig. 42, an image forming apparatus comprising first, second and third detecting units in three different positions along the main scanning direction. It would have been an obvious design choice to a person of ordinary skill in the art to modify Maeda to include a plurality of third detection units in a third position in order to more accurately detect the position of the laser during scanning.

Allowable Subject Matter

Claims 3, 4, 12, 22, 24, 25, 27 and 28 are allowed.

Claim 23 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 3, prior art fails to teach or reasonably suggest an image forming apparatus or an image forming method comprising a plurality of third detecting units, each third detecting unit situated at a third position along the main scanning direction of a corresponding laser beam, wherein the third detecting unit detects the corresponding laser beam, and a clock frequency adjusting unit that counts the number of clocks for one laser beam as a reference value and adjusts a write clock frequency of

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each of the other laser beams excluding the one lased beam so as to coincide with the reference value, in addition to the other limitations of the claims.

With respect to claim 23, prior art fails to teach or reasonably suggest an image forming method comprising using a plurality of third detecting units, each third detecting unit situated at a third position along the main scanning direction of a corresponding laser beam, wherein the third detecting unit detects the corresponding laser beam, and using a clock frequency adjusting unit that counts the number of clocks for one laser beam as a reference value and adjusts a write clock frequency of each of the other laser beams excluding the one lased beam so as to coincide with the reference value, in addition to the other limitations of the claim.

With respect to claims 4 and 24, prior art fails to teach or reasonably suggest an image forming apparatus comprising the clock frequency adjusting unit that includes a phase-locked loop with variable filters that multiplies a reference clock by a multiple N and varies the number of filters in the phase-locked loop and the multiple N to adjust the write clock frequency, in addition to the other limitations of the claims.


With respect to claims 12, 22, 25, 27 and 28, prior art fails to teach or reasonably suggest a clock frequency adjusting unit shared by the optical systems, in addition to the other limitations of the claims.

Telephone/Fax Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suez Ellis whose telephone number is (571) 272-2868. The examiner can normally be reached on 8:30am-5pm (Monday-Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Stephone B. Allen
Primary Examiner